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**To the International Preliminary  
Examining Authority  
EUROPEAN PATENT OFFICE  
Patentlaan 2  
NL-2280 HV Rijswijk  
OLANDA**

Torino, February 24, 2005

VIA FAX - 9 PAGES

Our Ref.: E-1961/03 LF

Dear Sirs,

**RE: International Patent Application No. PCT/EP 03/51112**  
**Applicant: DAYCO EUROPE S.R.L. et al.**  
**Examiner: F. Goeman.**

Reference is made to the First Written Opinion dated December 29, 2004 in connection with the above-referenced international application.

Please find herewith enclosed amended pages 2a, 3, 3a of the description as well as a new set of claims.

The examiner's remarks have been taken into consideration. Accordingly, claim 1 has been amended to include the features of claim 2. The remaining claims should be allowable as depending on amended claim 1.

According to the present invention, a single appendage fixed to the base plate of the tensioner defines a contrast element for both the first and the second arm. The structure of the base plate is therefore simplified. As acknowledged by the examiner, this feature is neither known, nor suggested by the cited prior art.

The description has been amended to comply with the amended claim, and the closest prior art has been acknowledged in the introductory portion of the description.

On the grounds of the above amendments, we believe that the international application should now be in compliance with the PCT provisions and hope that a positive international preliminary examination report may be established.

Yours faithfully,

*Luigi Franzolin*  
Luigi Franzolin

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WO-A-00/77422 discloses a belt tensioner including a fixed portion, a first and a second arm hinged to the fixed portion about a common axis and carrying respective idle pulleys, and a spring biasing the arms towards one  
5 another to maintain the pulleys in contact with respective branches of a transmission belt.

Stop means are provided to limit the travel of each arm both in the direction of the spring force, so as to define an assembly position of the arms, and in the  
10 opposite direction to prevent overtravel of the arms under dynamic pull variations of the belt.

#### DISCLOSURE OF INVENTION

An object of the present invention is to provide an improved tensioner of the type briefly discussed above,  
15 which has a simplified structure in particular regarding the fixed portion.

~~DISCLOSURE OF INVENTION~~

The purpose of the present invention is to obtain a two-arm belt tensioner of the type briefly described above, which is particularly simple and compact, easy to  
5 install and to handle prior to installation on the engine, ~~and convenient to install on the engine itself.~~

The above purpose is achieved by a two-arm belt tensioner for a belt drive, comprising: a fixed portion, designed to be fixed to a supporting structure; a first  
10 arm and a second arm, carried by said fixed portion and hinged thereto about a common axis; a first pulley and a second pulley, mounted idle on respective ends of said arms and designed to co-operate with respective branches of a belt of said drive; and elastic means, which force  
15 said arms towards one another to maintain said pulleys in contact with said respective branches of the belt, ~~said belt tensioner being characterized in that said arms comprise~~  
*comprising* first arrest elements, which are designed to interact with said fixed portion to define respective  
20 first positions of arrest of said arms under the action of said elastic means, and respective second arrest elements, which are designed to interact with said fixed portion to define respective second positions of end-of-travel of said arms under the action of the pull of said  
25 belt,

~~BRIEF DESCRIPTION OF THE DRAWINGS~~

~~For a better understanding of the present~~

said fixed portion comprising a base plate and a pin fixed to said plate and defining said common axis of rotation of the two arms, said belt tensioner being characterised in that said fixed portion includes an  
5 appendage fixed to said base plate and defining an element of contrast for said first and second arrest elements of said arms.

#### BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present

## CLAIMS

1. A two-arm belt tensioner for a belt drive (1), comprising: a fixed portion (21), designed to be fixed to a supporting structure (22); a first arm (23) and a second arm (24), carried by said fixed portion (21) and hinged thereto about a common axis (A); a first pulley (25) and a second pulley (26), mounted idle on respective ends (60, 61) of said arms (23, 24) and designed to co-operate with respective branches (15a, 15b) of a belt (15) of said drive (1); and elastic means (27), which force said arms (23, 24) towards one another to maintain said pulleys (25, 26) in contact with said respective branches (15a, 15b) of the belt (15), ~~said belt tensioner being characterized in that~~ said arms (23, 24) <sup>comprising</sup> ~~comprise~~ respective first arrest elements (37, 47), which are designed to interact with said fixed portion (21) to define respective first positions of arrest of said arms (23, 24) under the action of said elastic means (27), and respective second arrest elements (38, 39; 48, 49), which are designed to interact with said fixed portion (21) to define respective second positions of end-of-travel of said arms (23, 24) under the action of the pull of said belt (15),

25 ~~2. The belt tensioner according to Claim 1, characterized in that~~ said fixed portion (21) <sup>comprising</sup> ~~comprises~~ (30) a base plate (30), a pin (31) fixed to said plate, and

defining said common axis (A) of rotation of the two  
~~<said belt tensioner being characterised in that said fixed portio~~  
arms (23, 24), ~~and~~ an appendage (32) fixed to said base <sup>(21)</sup> include

plate (30) and defining an element of contrast for said  
first and second arrest elements (38, 39; 48, 49) of  
said arms <sup>(23, 24)</sup>

5 ~~2/~~ The belt tensioner according to Claim <sup>1</sup>/~~2~~,  
characterized in that said at least one of said first  
and second arrest elements (38, 39; 48, 49) of said arms  
(23, 24) comprises a radial projection (47, 38, 48),  
10 which extends from the respective arm (23, 24) and is  
designed to interact with said appendage (32) of said  
fixed portion (21).

~~3/~~ A. The belt tensioner according to Claim <sup>2</sup>/~~3~~,  
characterized in that at least one of said arms (23, 24)  
15 comprises a hub (34), which houses at least partially  
said base plate (30) and is provided with an opening  
(36), through which there comes out said appendage (32),  
at least one of said arrest elements (37) being defined  
by an end contrast element delimiting said opening (36).

20 ~~4/~~ The belt tensioner according to any one of the  
preceding claims, characterized in that said first and  
second arrest elements (38, 39; 48, 49) are provided  
with respective buffers (39, 49) made of elastic  
material for absorbing the impact with said fixed  
25 portion (21).

~~5/~~ The belt tensioner according to any one of the  
preceding claims, characterized in that said elastic

means comprise a spiral spring (27) and in that one of said arms (24) comprises a cup-shaped hub (45), which houses said spring (27), said spring (27) being constrained, with its own outer end (40), to said hub (45) and, with its own inner end (44), to the other arm (23).

6/. A belt drive (1) for connecting a reversible electric machine (4) to an engine shaft (6) of an internal-combustion engine (2), said electric machine (4) being operable as an electric machine for starting said internal-combustion engine (2) or as generator, said drive (1) comprising: at least one first pulley (7) fitted on the engine shaft (6) of said internal-combustion engine (2); a second pulley (8) fitted on a shaft (9) of said electric machine (4); and a belt (15) wound around said pulleys (7, 8), said belt (15) comprising: a first branch (15a) and a second branch (15b) set respectively between said first pulley (7) and said second pulley (8) and between said second pulley (8) and said first pulley (7) in the direction of motion of the belt (15) itself; and a two-arm belt tensioner (20), which comprises: a fixed portion (21), designed to be fixed to a supporting structure (22); a first arm (23) and a second arm (24), carried by said fixed portion (21) and hinged thereto about a common axis (A); a first pulley (25) and a second pulley (26), mounted idle on respective ends (60, 61) of said arms (23, 24)

and designed to co-operate respectively with said first branch (15a) and with said second branch (15b) of said belt (15); and elastic means (27), which force said arms (23, 24) towards one another to maintain said pulleys (25, 26) in contact with said respective branches (15a, 15b) of the belt (15); ~~said belt drive being characterized in that~~ said arms (23, 24) <sup>comprising</sup> ~~comprise~~ respective first arrest elements (37, 47), which are designed to interact with said fixed portion (21) to define respective first positions of arrest of said arms (23, 24) under the action of said elastic means (27), and respective second arrest elements (38, 39; 48, 49), which are designed to interact with said fixed portion (21) to define respective second positions of end-of-travel of said arms (23, 24) under the action of the pull of said belt (15); < - > see page 18

7/8. A belt tensioner according to Claim 6/  
characterized in that said elastic means (27) have a rigidity calculated so as to bring about a rotation of each arm (23, 24) of the tensioner (20) up to the respective second position of arrest in the presence of a maximum value of tension of the respective branch of the belt.



< said fixed portion (21) comprising a base plate (30), a pin (31) fixed to said plate (30) and defining said common axis (A) of rotation of the two arms (23, 24), said belt drive being characterised in that said fixed  
5 portion (21) includes an appendage (32) fixed to said base plate (30) and defining an element of contrast for said first and second arrest elements (38, 39; 48, 49) of said arms (23, 24). >

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